

DATE: March 13, 1987

TO: Division Engineers

THRU: Eric H. Bartsch, P.E., Director  
Division of Water Programs

FROM: Allen R. Hammer, P.E., Director  
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SUBJECT: Water - Design - Distribution System 20 psi - Fire  
Flows and Individual Home Booster Systems

I. New Construction

- A. Waterworks must provide 20 psi (under all flow conditions - Section 7.06.02, 12.02.01 and 12.10 Waterworks Regulations February 1, 1982) in the watermain and at all connections to the watermain. There may be occasions where this is not feasible and individual home booster pump/pressure tank systems could be used to correct minor pressure deficiencies. If home booster pump pressure tank systems are needed, we will require (1) a 10 psi cut off as for other booster pumps (2) the PWS owner to own and operate these devices and (3) that the deed for each lot served by an individual booster pump pressure tank system be annotated to reflect its installation.

When reviewing a set of distribution system plans, the review engineer will determine that 20 psi is maintained throughout the distribution system under all flow conditions (preferably by reviewing calculations provided by the design engineer). If fire protection (fire hydrants) is provided, fire flows must be considered. The design engineer is responsible for providing fire flow calculations. Fire hydrants are not to be allowed on systems "only as a blow off".

- B. The consultants should determine if the probable home or building site has sufficient pressure. Do not spend much time determining if homesites can be served; if the information is not already provided, ask the consultant.

[NOTE: From AWWA Manual No. M8 pg 9 "...if 20 psi is available in the street and the customer has a two-story house located somewhat above street level, after allowance for friction losses in the customer's service branch, meter, and house piping there remains about enough pressure to provide a minimum flow at the second-story level. A pressure of 30 psi is a more desirable minimum for normal residential requirements. Normal pressures in a distribution system under average conditions of flow should range between 50 and 80 psi..."]

- C. Two unusual conditions that might arise are:

1. The review engineer notes in the course of the review that a portion of the likely homesites will not have adequate pressure in spite of 20 psi minimum in the water transmission line.

2. The project layout is such that it cannot maintain 20 psi throughout the system under all flow conditions.

For condition 1. we will recommend to the consultant and owner that a higher pressure should be considered. If the design is not changed, we could approve the system but notify the Building Official and the owner that certain lots will need additional consideration by the building Official before issuance of a building permit.

For condition 2, the review engineer will require the design engineer to propose alternatives.

## II. Existing Homes

If an existing homeowner desires to install an individual home booster pump/pressure tank system so he can have greater pressures, this is a matter for the local building official. We will not object so long as a 10 psi cut-off is installed. We must remain alert to these situations as installations at many homes would suggest that the public water system is not performing properly under all flow conditions. The waterworks owner will be required to resolve any public water system problem.

TBG/ARH/edc